



# MAGAZINE

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FRONT COVER. *A country lane near Welwyn*, by R. G. Farrand.

## OUR CONTRIBUTORS

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F. M. S. HARMAR-BROWN of Central Publicity Department needs by now no introduction to readers, who know him as a master of descriptive prose with the gift of making the supposedly abstruse clear and simple. This time he writes a funny article.

DONALD SHARP, who joined the Company in 1949, returned recently from a one-year visit to the United States. After studying for six months at an American college in the "Deep South" he worked for an electric power company in California. Back again in the Alkali Division he is continuing his work as an electrical engineer.

RUPERT DE ZOETE has been in the antique business in London for the last eighteen years apart from the war, when he served in the 12th Lancers. The classical English furniture of the eighteenth century is the style that he most admires.

# FRIENDLY AMERICA

## Some Experiences of Life at a Southern University

By Donald Sharp (Alkali Division)

As the holder of an E.C.A. industrial scholarship, Donald Sharp spent a year in the United States, most of it at a Southern university. This is an unusually vivid and observant account of the American student's way of life—so different from our own—written by one whose heart warmed to Americans for their friendliness, their enthusiasms and their zest for hard work and hard play.

A RED-CAPPED New York porter carried my luggage down into the depths of the massive cathedral-like hall which was the railroad station from which I was to depart to the Deep South and the "Gone with the Wind" country. As we reached the platform I saw the shining silver, streamlined, diesel-electric train called the Crescent Limited in which I was to travel in luxury in a "roomette"—a small well-designed compartment for one person with a ready-made bed which folded from the wall.

Soon we were racing through open country, having left many of the industrial towns far behind. Before long it was dark and the deep wail of the train's hooter called out into the still night. At level crossings tinkling bells and waving signals warned motorists of the train's approach. We stopped at a few stations and in the dim light I could see attractive southern names such as Charlottesville and Spartanburg. The countryside had changed and the trees and foliage were noticeably different, even in the moonlight. We raced through small towns, passing houses with verandas and shutters, and the sudden change in surroundings made me really aware that I was in a foreign country.

On being awakened by the porter and looking out of the window there was a sight which I shall not easily forget—Georgia in the morning sunlight. The brilliant red earth, about which I had read so much, peeped out from under wooded hillsides, and the trees, already turning into their beautiful autumn hues of red, russet brown and golden yellow, waved gently upwards to the pure blue sky and dazzling sun. The colonial-type homes with their stately porticos and pediments had become alive with children playing in the gardens and negroes working in the fields. As we slowed down to enter the outskirts of Atlanta I could almost sense the warmth and friendliness of the South.

At the station I pushed my baggage into a locker, put in a

dime, withdrew the key, and my baggage was then safe until I wished to collect it later. People were most helpful and directed me to the Georgia Institute of Technology, where I was to spend the first six months of my stay in America.

I was careful to sit at the front of the bus, as the colour bar is very strong here, and just as "whites" will not allow the "niggers" to sit on any front seats, so the negroes resent white people sitting at the back of buses and trains. There are always separate waiting rooms and toilets for the two races and the negroes have their own quarters in the cities or towns in which to live. Here they have their own negro doctors and other professional men and are supervised by negro police. At first the colour bar seems very unfair and undemocratic; only after hearing the history and troubles of the South does one realise that it will take time for the southern states to give the negroes their full rights as American citizens.

Life at "Georgia Tech." was very pleasant. The lecturers, staff and students were most friendly and helpful and had a slow, easy way with them. The hurry and bustle of the north-east had been left far behind. Georgia Institute of Technology is one of the leading engineering colleges in the Southern states. It has a college song which is often sung throughout America and which starts: "I'm a rambling wreck from Georgia Tech. and a helluva'n engineer."

The appearance of the students was striking. Dressed in gay-coloured plaid shirts and khaki trousers or blue jeans, they contrasted sharply with their British counterparts. First-year junior students wore yellow caps to signify that they were freshmen, and I learned later that when they are approached by a senior they were expected to perform certain antics to show their subservience. Around the college were all kinds of snack bars and grills where one could enjoy iced milk shakes or hot coffee between lectures.

At lectures the atmosphere was quite informal and many of

the classes I attended developed into discussions, with the students giving short talks and illustrating their ideas on the blackboard. Students were very keen and enthusiastic and plenty of work was set for private study. Degrees are awarded, not on the results of final examinations, but on attendance records and the results of short tests held weekly or monthly. These "quizzes" were often "open book," and so there was little need for any last-minute memorising of formulae.

The majority of students live on the campus,\* either in dormitories or in fraternity houses. Fraternities (or sororities for women) are groups of 20–30 students who live together in a house owned by their society. They are independent from the college and run their house and social events under the leadership of elected officers from the fraternity.

### Nation-wide Fraternities

Many of the fraternities are nation-wide and have chapters at the leading colleges. Their procedures are often secret, and they are usually named with letters from the Greek alphabet such as "Kappa Alpha." Membership fees are quite high, so there is a tendency for them to be limited to the more wealthy students. To be a member of a fraternity is a social distinction for the rest of one's life, and "brothers" are able to recognise one another by badges or rings, and will usually help one another should the opportunity arise.

The number of people awarded degrees in America is very high and a large proportion of the population is able to attend one or other of the many colleges and universities. Quite a number of students work part time and are able to earn enough at week-ends and in the evenings to attend college full time. It is not considered undignified to work in drug stores or at any menial task so long as it is remunerative. In America the only class distinction that I observed was between those who had money and those who had not, and the opportunity to make money was certainly there for all.

College football is the highlight of the week-end entertainment, and it draws thousands of spectators not only from the campus but also from the adjoining city.

A college team usually has an enthusiastic following of supporters who pay high admission charges to see the game and so provide the college with an excellent income. Although called football it is a very different game from the English version; while it has some similarities to Rugby, there is the major difference that the game stops the moment the ball touches the ground.

There can be as many as fifty men on each side, and they wear crash helmets, shoulder pads and brightly coloured suits with large numerals on the back for easy identification. Of these, only eleven men from each side are on the field at any one time, the remainder being available as replacements for casualties and exhausted players. During the many pauses in the game the referees give "time out" while changeovers are being made, and usually five or ten men will run off the field to be replaced by others. A turn in the game may have called for a change in tactics, perhaps from attack to defence, in which case the coach would send on heavy players who specialise in this type of play.

Four referees control the game with the help of linesmen.

\* Student's term for the college buildings and grounds.



Members of the team not playing sit along the edge of the pitch with the coach, manager, first aid staffs and other officials. The game is rough, weight and brute force being essentials. To one uninitiated in the finer points of the play it is quite comical. "Blocking" is allowed, which means that the path of any man on the opposing side may be blocked, even if he does not have the ball. Blocking seems to be not far short of charging—so it becomes clear why so many spares are required.

One of the main purposes of the tactics is to conceal the movements of the ball from the opposing side, so each player makes various actions to suggest that he has just received the ball, or is about to, or has just made a pass. This, of course, baffles the spectators just as much as the players.

At the start of the game there is a short burst of activity lasting about fifteen seconds which ends when one of the four referees blows his whistle. This means that the ball has touched the ground, and it usually has five or six men on top of it. The game stops and those able to get to their feet do so, the others being carried off to receive first aid and oxygen. Replacements run on, tactics are discussed in a huddle, and off we go again for another fifteen seconds.

### *The Cheer-leader's Function*

I found that the rather discontinuous nature of the game causes the spectators to lose interest, but this is taken care of by having "cheer-leaders," who perform antics, do Swedish drill and conduct the supporters' cheering. If a pause seems likely to be a long one, with many casualties, then the band starts up, and to pass the time one can buy ice-cold beer, coca-colas and peanuts from small negro boys.

During the interval the bands really come into their own, and in turn each team's band of about fifty musicians, dressed in bright uniforms, enters the field. While playing they carry out a kind of drill and weave in and out, forming letters and patterns. It was a little childish, perhaps, but nevertheless cleverly done. Attractive girl "majorettes" would lead the bands doing acrobatics and baton-throwing, and as they were usually scantily dressed there was much cheering from the appreciative spectators.

The college quarter lasted until Christmas, but a pleasant break came at Thanksgiving. This is a public holiday on the last Thursday in November, when Americans celebrate the first successful harvest of the Pilgrim Fathers. It is a little like Christmas in some ways, with a dinner of turkey and plum pudding. I was delighted to be invited by one of the professors to spend Thanksgiving with him at his parents' home in Columbia, Ohio.

We travelled in his large automobile—a Dodge of about 30 h.p.—and did the 600-mile journey in just under fourteen hours. To me it was a long journey to make at one stretch, but my American friend thought nothing of it.

Cars are much larger than in this country and their broad wheelbases enable corners to be taken much faster; they have powerful engines and are able to maintain high speeds on the many fine highways, some of which have eight lanes.

In every way a car is used to keep up the fast pace of American life, and they are continually being improved. Automobiles can be fitted with as many gadgets as one can



HALF-TIME AT A COLLEGE FOOTBALL MATCH. In suits of gold, white and black, the band takes the field. In the foreground the referees, dressed in their striped shirts, can be seen taking a well-earned



rest. American college football takes big gate-money, which provides the college with an excellent income.

(Photo by author)

afford, and these range from a switch on the dashboard which opens and closes the garage doors by radio control, to indicator lamps to show if the doors are all closed or if the car is close enough to the curb for parking. Heaters and radios are almost a standard fitting, and coolers are commonly used by people living in the warm mid-Western states. On the latest cars the controls consist of just a steering wheel, accelerator and brake, the hydraulic transmission system taking care of the gear changes automatically. Many people travel a total of 100 miles each day to get to work, and nothing is thought of a 500-mile

week-end outing or a 100-mile journey for a Sunday picnic.

American people are indeed hospitable, and it was a pleasant change from college life to relax in a comfortable home.

Kitchens are extremely well designed and have the most up-to-date fittings. Some homes have a "deep-freeze" refrigerator, which enables perishable food to be kept for months. Sides of bacon, cuts of meat, vegetables and fruit can be kept almost indefinitely. In some towns a large refrigerator is installed in a centrally located building and lockers are available for hire to people who do not have their

own "deep-freeze." The majority of homes have a normal type of refrigerator—often referred to as the ice-box. These have become a necessity due to the high summer temperatures.

Drinks which have not been chilled and which are served at room temperature are described as warm, and it is strange to hear Americans recalling their days in Britain when they used to have to drink "warm beer." Bottled beer is rarely seen, it nearly all being "canned" (tinned); also it is not unusual to drink direct from the tin, without going to the trouble of using glasses.



Washing machines are more or less a standard fitting, and many homes have electric clothes-dryers. Dish-washing machines are not so common, but the one I did see worked in a highly successful manner.

Both radio and television programmes are sponsored, and at first the interruptions for "commercials" are rather disturbing, but one soon gets used to them. In some areas there are as many as twelve radio programmes and eight television channels from which to choose, and in my opinion the good variety makes the commercials tolerable. Television reception was extremely good, and since the transcontinental television link has been working a good picture of an event happening in San Francisco can be watched quite clearly in New York, 3000 miles away.

### The American Home

Very many American homes are of timber construction and they are often painted white or in light colours, giving a clean appearance to the towns. Brick houses are only built in areas where clay is plentiful and cheap. Central heating is a "must" for most homes, due to the severe cold, and houses are constructed with large basements to contain the air or water heating equipment with its automatically controlled oil or coal furnaces. Hot water is sometimes used for heating, but in the homes I visited warm air was carried in ducting to gratings in the floors of different rooms. Thermostatic control is employed and room temperatures are kept to around 75 degrees, which is high by our standards and takes some getting used to.

There were many interesting features about American homes, and this, my first visit to one, was most enjoyable.

Back at Georgia Tech. the time came all too soon for me to make my departure from the South. I was sorry to leave this most interesting part of the United States, but it had been arranged that the second half of my training was to be with an electric power company in California. So ahead of me was the pleasant prospect of a 3000-mile train journey.

If there is one place in America where I should choose to live it is San Francisco. This beautiful city, well known for its two famous bridges—the Golden Gate Bridge and the Bay Bridge—is surrounded by water on three sides due to its position on the tip of a peninsula. It is a city of hills, but in spite of them the streets follow the standard American pattern of a right-angled latticework, and so ascend the hills at alarming gradients. Clanging cable cars form a romantic part of San Francisco's transportation system, and they swing along up and down the steep hills pulled by underground cables.

I worked in one of the large buildings in the city, on the edge of the financial district. The offices were well laid out and spacious and most of my time was spent on the upper floors. It was quite some time before I was used to the unpleasant sensation caused by shooting up and down in the fast-moving elevators. I worked a five-day forty-hour week and so had plenty of time to enjoy California.

It was not difficult to enter into the American spirit of never wasting a moment by working hard and playing hard—it is somehow infectious. In the evenings there would always be a group of people going somewhere—to theatres, concerts,

dances and parties. At the week-ends we would have picnics either up in the hills or on the Pacific beaches.

Many of my friends had cars, and a total of 500 miles of travel for the week-end was not considered excessive. We had two outstandingly successful trips, one to Yosemite Valley and the other to Lake Tahoe and Reno. The weeks soon passed.

When I eventually sailed for Liverpool I was indeed sorry to leave the United States and to have to say good-bye to a people whose delightful casualness and natural friendliness had so quickly made me feel at home. Looking back, the two things that stood out most of all were the beauty and grandeur of the American scenery and the friendliness and hospitality of the people. There may be a tendency here for us to accuse the Americans of exaggerating, but I came to realise that they certainly have a great deal about which to be proud.

We are perhaps prone to judge the Americans mainly by three things: their films, newspapers, and the behaviour of their servicemen in this country. All of these give an unrepresentative picture of the average American.

At home here on our small island we are overpopulated and because of this have a desire for privacy, whereas the American people living in such a vast country have never developed this attitude and still retain a natural friendliness towards one another. During my travels through 37 of the 48 states of America I was entertained by people I had never met before but whose addresses had been given to me by friends. Their kind hospitality meant a great deal to me when travelling alone.

### Things I liked less

While there are many things I admired about the American way of life, there are other things I liked less. Their economy is founded on free enterprise and competition with a minimum of control. This is fine in principle, but unfortunately it can go to extremes. For example, some newspapers will print exaggerated headlines or partial truths in order to increase their sales. Occasionally manufacturers will use "fear advertising" to promote sales; one "commercial" I heard on the radio ran along these lines: "Perhaps your little girl is feeling inferior to other children because you do not own a television set"! There are other examples of this type of advertising which, in my opinion, is unwarranted.

I came across some anti-British feeling in America, particularly on the west coast, where there is a slight tendency towards an isolationist viewpoint. The great distance of this part of the world from Europe probably accounts for this.

One American I was talking to said he had been to England and knew it well, so I asked him what he thought was the most striking difference between our two countries. "Well," he said, "here we tear a thing down as it becomes obsolete and rebuild it bigger and better, whereas in your country you build for posterity." We had previously been discussing railway stations, and I could not help thinking that there was some truth in what he said.

I am very grateful to the American people for having provided a foreign student with this wonderful opportunity to get to know their way of life. Our two countries are different in many respects, but there are strong ties between us which I hope will be strengthened in the years to come.

# Information Notes

## THE AMERICAN STANDARD OF LIVING

By Donald Sharp (Alkali Division)

*How much does it cost to live in the United States? And are the advantages of high salaries neutralised by the higher cost of living? Here are some approximate salaries and prices quoted from personal observation by Mr. Donald Sharp, whose article on his experiences as an E.C.A. scholar is printed on page 290.*

THE following salaries, income tax deductions, and prices are only approximate, but it is hoped that they will serve as a guide to illustrate the standard of living in San Francisco, California, in 1951. Dollar equivalents in pounds are given to the nearest 10s., and an exchange rate of \$2.8 to the pound has been used.

### Typical Average Salaries

Position	\$/month	£/week
Office boy .. .. .	200	£ 18 0
Janitor .. .. .	240	21 10
Routine typist .. .. .	250	22 10
Labourer .. .. .	250	22 10
Lift operator .. .. .	250	22 10
Routine stenographer .. .. .	280	25 0
Tracer .. .. .	280	25 0
Patrolman .. .. .	300	27 0
Lorry driver .. .. .	300	27 0
Ledger clerk .. .. .	310	27 10
Carpenter .. .. .	310	27 10
Painter .. .. .	310	27 10
Draughtsman .. .. .	320	28 10
Bricklayer .. .. .	320	28 10
Junior engineer (straight from college)	330	29 10
Fitter .. .. .	330	29 10
Welder .. .. .	330	29 10
Electrician .. .. .	340	30 10
Machinist .. .. .	340	30 10
Cableman .. .. .	380	34 0
Assistant engineer .. .. .	400	35 10
Construction engineer .. .. .	430	38 10
Maintenance foreman .. .. .	430	38 10
Shift foreman .. .. .	460	41 0
Experienced design engineer .. .. .	500	44 10

### Examples of Income Tax Deductions

Salary		Income Tax Deductions			
		Single Man		Married Man with One Child	
\$/month	£/week	\$/month	£/week	\$/month	£/week
200	£ 18 0	26	£ 2 6	6	£ 1 1
300	27 0	45	4 0	24	2 3
400	35 10	66	5 18	42	3 15

### Typical Prices

Boarding house .. .. .	\$100 per month	£9 per week
Hotel (per night, no meals)	\$3.50 to \$5	£1 5s. to £1 16s.
New house* .. .. .	\$15,000	£5350

### Meals at Cafés and Restaurants

Breakfast .. .. .	70c.	5s.
Lunch .. .. .	80c.	5s. 9d.
Light dinner .. .. .	\$1.25	9s.
Four-course steak dinner .. .. .	\$2.50 to \$4.50	18s. to £1 12s.

### Food

Meat .. .. .	per lb. 80c. to \$1	5s. 9d. to 7s. 2d.
Butter .. .. .	per lb. 90c.	6s. 5d.
Sugar .. .. .	per lb. 14c.	1s.

\* Two living rooms, two bedrooms, bathroom and kitchen; including central heating equipment.



*Drinks*

Coffee (cup) .. ..	10c.	8½d.
Tea (cup) .. ..	10c.	8½d.
Milk (glass) .. ..	15c.	1s. 1d.
Milk shake (glass) ..	25c.	1s. 9d.
Beer (glass) .. ..	30c.	2s. 2d.
Whisky (½ bottle) ..	\$3.50	£1 5s.

*Men's Clothes*

Suit .. ..	\$45 to \$90	£16 to £32
Overcoat .. ..	\$50 to \$80	£18 to £28 10s.
Sports coat .. ..	\$30 to \$50	£10 10s. to £18
Trousers .. ..	\$15	£5 10s.
Shirt .. ..	\$3.50 to \$6	£1 5s. to £2 3s.
Tie .. ..	\$1 to \$2.50	7s. to 18s.
Socks .. ..	\$1 to \$4	7s. to £1 8s.
Hat .. ..	\$5 to \$15	£1 16s. to 15 7s.
Shoes .. ..	\$10 to \$20	£3 12s. to £7 3s.

*Travel*

Car .. ..	\$1800 upwards	£645 upwards
Petrol .. ..	24c. per gal.	1s. 8½d. per gal.

*Train:*

3rd class .. ..	2.7c. per mile	2¼d. per mile
1st class and sleeper ..	5.4c. per mile	4½d. per mile

Long-distance bus ..	1.8c. per mile	1½d. per mile
City buses (any distance) ..	10c.	8½d.
Bicycle .. ..	\$63	£22 10s.

*Miscellaneous Items**(a) Household*

Radio .. ..	\$25 upwards	£9 upwards
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*Television:*

16 in. Console model ..	\$360	£129
16 in. Table model ..	\$300	£107
20 in. Console model ..	\$520	£186
Refrigerator .. ..	\$300	£107
Vacuum cleaner .. ..	\$100	£36
Portable typewriter ..	\$110	£39

*(b) Entertainment*

Cinema .. ..	85c.	6s.
Theatre .. ..	\$1.85 upwards	13s. upwards

*(c) Personal*

Haircut .. ..	\$1.25	9s.
Shoeshine .. ..	25c.	1s. 10d.
Newspaper .. ..	7c.	6d.
Telephone call .. ..	5c.	4½d.
20 cigarettes .. ..	20c.	1s. 5d.

## TITANIUM—A METAL WITH A FUTURE

Contributed by Metals Division

*Titanium is a metal with extremely valuable properties: it looks and wears like stainless steel but is less than two-thirds as heavy. Unfortunately the winning of the metal from the ore is both a difficult and an expensive matter. Here a Metals Division expert gives a brief sketch of the problems involved.*

WHAT is it that looks and wears like stainless steel but is less than two-thirds as heavy? The answer, as almost no schoolboy knows yet, is metallic titanium—one of nature's most provoking prizes.

This metal with the unfamiliar name (recalling the incarnation of natural strength popularised by Greek mythology) has all the qualities of a metallurgist's dream—strength, lightness and resistance to corrosion. It is not even rare or, in its natural state, difficult to come by. Fifty times more abundant than copper or tin, it is generously distributed all over the earth's surface.

Why, then, has this plentiful and useful metal remained virtually unexploited? The answer is that winning the metal

from the ore and consolidating it into workable form present peculiar and exasperating problems, quite unlike those encountered with any other structural metal. To begin with, very powerful reducing agents are needed to extract the metal from the ore. Oxygen and nitrogen (air) must be excluded from all except the later stages of processing, since they make the metal brittle. Most difficult of all, liquid titanium dissolves or is contaminated by every material normally used to line a heating furnace.

A few shafts of light have, however, pierced this frustrating darkness in recent years. Urged by the shortage of other much-needed materials, metallurgists have concentrated on

solving in turn most of the problems posed by the tantalising titanium. I.C.I., through General Chemicals and Metals Divisions, is in the forefront of experimental and development work in this country.

The production of cast titanium (casting is the basis of all metal fabricating processes) is done in five stages. Crude ore is first converted into titanium dioxide and then into titanium tetrachloride. So far, so good. Both these processes are well established and comparatively simple. The snags begin in the third stage, when the object is to produce metallic titanium. This transformation involves using one and a half pounds of magnesium for every pound of titanium. The necessary chemical reaction between the two is carried out under argon gas so as to avoid picking up air.

Having done its job, the magnesium must next be removed. This is done by heating the mixture to about 1000° C. in a high vacuum, which produces a spongy, coke-like mass of titanium about 99% pure. Finally ingots are produced by



A metallurgist's dream

melting the titanium sponge in a novel type of arc furnace. The metal, which melts at a temperature of 1730° C. (about 200° above the melting point of steel) is contained in a copper crucible cooled by water.

Once cast, titanium is reasonably amenable to most ordinary metal fabricating processes, and forgings, extruded sections and tube, rolled bar and plate and drawn wire have been produced on a pilot scale by Metals Division research workers. One of the biggest problems, however, is to keep down trimmings and turnings, for unlike the residue of most non-ferrous metals, titanium scrap cannot be remelted and used again. This of course adds enormously to the cost of an already expensive material.

As if conscious of its immense potential value, titanium flaunts its "temperament" like a fledgling ballerina. There are, however, encouraging signs that in time it can be tamed to take its proper place as one of our major structural metals.



Magnesium must next be removed

## FLUORINE FOR BETTER TEETH

Contributed by General Chemicals Division

*Last May the town of Kilmarnock in Scotland announced that they had decided to introduce fluorine into the municipal water supply in order to improve the teeth of the inhabitants. Here is the background story of this development and of how it was discovered that fluorine has this remarkable property.*

THERE is an old legend about the inhabitants of a village in Cyprus who were notorious for stealing eggs. To stop this, a curse was laid on the villagers that for ever afterwards their teeth would be stained the same colour as the yolks of the stolen eggs.

This is one of many early references to the condition of teeth known as "mottled enamel." In typical cases the enamel appears unnaturally white, like unglazed paper, either in patches or over the whole surface. In more severe cases brown spots or bands appear on the enamel and eventually the teeth appear absolutely black. Although it was long suspected that this condition was in some way connected with the water supply, only within the last twenty-five years has it been shown that mottled enamel is due to excessive amounts of fluorine in the drinking water.

It has since been observed that in areas where mottled enamel is prevalent the normal decay of the teeth is considerably less than average. During the last war, for example, a

dentist noticed that children evacuated from South Shields had remarkably good teeth. This observation was followed up by a survey of the area, which yielded most interesting results. It was found that the water supply to South Shields contained 1.2–1.8 p.p.m. (parts per million) of fluorine and that in North Shields only 0.25 p.p.m. In most other respects these two towns are very similar. The survey showed that the incidence of decay in the teeth of children from South Shields was less than half that in North Shields. In children from West Hartlepool, where the water contains 2 p.p.m. fluorine, there was even less decay than in South Shields, but there was a considerable degree of mottled enamel.

These conclusions have recently been supported by similar evidence from high-fluorine areas such as Colchester and Maldon compared with low-fluorine areas such as Reading and Ipswich.

Similar studies had been made in the United States on a much wider scale, and it became clear that when the drinking



water contained about 1-1½ p.p.m. fluorine dental decay was appreciably reduced and no unpleasant effects of any kind were observed.

The next step was the fairly obvious one of adding fluorine to the water in areas where it was lacking, and now some two million people in America are in fact drinking water to which fluorine has been artificially added. In some of these areas the experiments have now been in operation for 4-5 years and the results have fully confirmed the anticipated benefits—considerable reduction of dental decay in children, with no undesirable side effects whatever.

As a result of this experience the practice of adding fluorine to drinking water supplies has received enthusiastic support from the leading medical and dental authorities in the United States, and plans are already approved for the "fluoridation" of water supplied to a further six million people.

There is still some doubt about the actual mechanism by which fluorine prevents or delays the onset of dental decay. One theory is that decay is largely due to the action of acids produced by enzymes acting on starches and sugars and the formation of these acids is prevented by the presence of fluorine.

The maximum benefits are conferred on children, i.e. when the fluorine is available while the teeth are being formed, but there is also some evidence to suggest that adults also benefit, although to a lesser degree.

Fluorine is, of course, a cumulative poison, and precautions must be taken to avoid giving too large doses. That is one of the reasons why water was chosen as the most suitable vehicle. The amount of water drunk daily, either alone or in beverages, is fairly constant and unlike other foodstuffs does not vary



... in some way connected with the water supply

appreciably according to the social status of the individual. It does, of course, vary according to the weather, but this can readily be taken into account by reducing the amount of fluorine added during hot weather so that the intake of fluorine per person remains approximately constant. Moreover, the practice of adding other chemicals to water in the course of purification and sterilisation is long established, and suitable equipment was available which, with minor modifications, could be used for the controlled addition of fluorine.

Fluorine is not added to the water as such, since it is a gas, its cost is high, and handling difficulties are considerable. It is usually added in the form of sodium fluoride or sodium silicofluoride, both of which are powders, soluble in water, which can be applied in accurately controlled quantities through more or less standard water dosing equipment.

The cost of the treatment is small. American experience indicates a figure of from 4d. to 1s. per consumer per year.

Although artificial introduction of fluorine into water has been done only in the U.S.A., the success of the treatment there has excited wide interest, and a team of British experts is in America studying all aspects of the problem and the results obtained. Meantime some local authorities are themselves taking an interest in the problem, and within the last few weeks the Director of Water Examination to the Metropolitan Water Board has made a strong plea for the introduction of fluoridation in this country with the least possible delay.



... the anticipated benefits

Since it is already known that much of the water in this country contains appreciably less than the desirable 1 p.p.m. fluorine, it is probable that the next few years will see the development of fluoridation of drinking water as yet another step in improving the health of the nation.

## THE MARVELS OF MOULDS

Contributed by Pharmaceuticals Division

*Everyone has heard of penicillin. But how many people know that our ancestors also took penicillin—with their cheese? For example, the French cheeses Roquefort and Camembert have their own strains of penicillin—P. roqueforti and P. camemberti. Here a Pharmaceuticals Division expert writes on the wonders of moulds and the marvellous drugs they have produced.*

USUALLY it is the little things in life that matter. This is especially true of those members of the plant kingdom which are commonly referred to as moulds and whose growth and activity have now become so important to man. The wonder drug penicillin is the by-product of a mould, *Penicillium*

*notatum*. It is rather remarkable that the product of such a minute growth could have changed so rapidly and so completely the practice of medicine in so far as the treatment of infectious diseases is concerned.

Moulds, of which more than 100,000 species are known,

belong to the very prolific family of fungi. Of these, mushrooms, truffles and morels have long been used as edible delicacies. The ripening processes used for certain cheeses, Roquefort, Gorgonzola, Stilton, etc., are dependent on the metabolic activity of certain moulds. Two varieties of penicillium mould, *P. roqueforti* and *P. camemberti*, are responsible for the distinctive flavours of the cheeses which bear these names.

Other members of the fungus family, the yeasts, have, from very early times, been of great economic importance on account of their capacity of breaking down carbohydrates such as plant sugars to form the products of fermentation—alcohol, carbon dioxide, glycerol, etc. We find yeasts in nature wherever sugar is present, in the nectar of flowers, in the exuded sap of trees and on the surfaces of fruits. In recent years yeast has been used as a valuable source of vitamin B complex, of which vitamin B<sub>1</sub> prevents and cures beri-beri. These small growths may perhaps be used some day as a valuable source of food, since one of their species, *Torula utilis*, can convert simple nitrogenous compounds into valuable proteins with amazing speed.

Other moulds are not so useful to man and can cause disease in both plants and animals. The damage which mildews and rusts cause to roses, hops and gooseberries is well known to gardeners, while doctors are still having to combat diseases such as thrush, sprue, ringworm, dhoby itch, athlete's foot and other dermatophytoses, all of which are caused by various species of these growths.

As far back as 1879 it was noticed that when two organisms were grown on the same substrate one overran the other, and the phenomenon was described as antibiosis. Earlier, in 1860, Pasteur had observed that *Penicillium glaucum*, a twin relative of the fungus Fleming was to isolate seventy years later, attacked certain dextro-rotatory forms of tartaric acid without touching the laevo-rotatory forms. The phenomenon that a mould, *Penicillium rubrum*, later classified as *P. notatum*, could produce a by-product which would inhibit bacteria, was noticed by Fleming in 1929. As the by-product was also relatively non-toxic to animals, he suggested that it could be used to inhibit disease.

The story of the successful development of Fleming's idea and the production of penicillin, the first and most valuable antibiotic, is now well known.

*P. notatum* is a multicellular mould composed of cells arranged end to end to form filaments. These filaments branch and re-branch, sometimes even uniting again, to form a structure called mycelium, which forms a loose meshwork. When the proper food and conditions are provided, growth is extremely rapid. The production of the antibiotic penicillin is, however, a very highly specialised procedure, and its produc-



Next in order of importance

tion on a commercial scale has only been made possible by intensive study and the close co-operation of both scientist and engineer.

In its production it is the little things that count. The strain of *P. notatum* used, the method of culture, the nutrient medium provided and the presence of certain chemicals called "precursors" all influence both the kind and the amount of penicillin produced. In addition, not a trace of contamination can be allowed in the carefully conditioned tanks where the cultures are grown.

Most of the penicillin produced today is made by the submerged growth process, using a medium consisting largely of corn steep liquor, sugars, salts, and those chemicals which favour the formation of benzylpenicillin. In this process the culture medium has to be agitated and aerated with sterile dust-free air in order to obtain submerged growth of the mould.

Of the many other antibiotics discovered and developed since penicillin, streptomycin is probably the next in order of importance. It was discovered by Waksman and his co-workers in 1944. Streptomycin is produced by the growth of *Streptomyces griseus* and by certain members of the Actinomyces group, a group of micro-organisms of the fungus family but which are both mould-like and bacteria-like. Under suitable conditions of growth *Streptomyces griseus* can also be used to produce the anti-pernicious anaemia factor Vitamin B<sub>12</sub>, now known as cyanocobalamin.

By this means this important factor has been made available more abundantly and more cheaply than it could ever have been if its natural source, liver, had remained the sole source of supply.

Recently the spent mould from certain antibiotic cultures has been found to produce an increase in the rate of growth of young animals and poultry when added to the feeding-stuff. As much as 10-15% increase in the rate of growth of poultry has been obtained when small amounts of an antibiotic such as procaine penicillin is added to the regular feed. Today big business is being done in the United States of America in the sale of antibiotic feed supplement to farmers.



Such a minute growth

The pioneer, Pasteur, who was the first worker to establish the fundamentals of fermentation, wrote in his *Etudes sur la Bière*: "I am convinced that the day will come when moulds will be used in certain industrial operations by virtue of their capacity to destroy organic matter."

Could he have really known how soon and the extent to which this prophecy would be fulfilled? The value of such minute growths to mankind cannot be over-estimated today. They have been harnessed so that their products of growth can be used to his advantage, creating thereby a new era in the fight against disease, in the treatment of pernicious anaemia and in food production.



# THE LIME-BURNER

"If you want to know about lime-burning," I was told, "you can't do better than ask Raymond Bacon." Raymond has been at Lime Division's Cowdale quarry for more than 46 years. Since 1938 he has been foreman, responsible for all phases of production there. But his real speciality is burning—the process that turns the raw limestone into quicklime.

I made the stiff climb from the Buxton-Matlock road up to the quarry and enquired for Raymond.

"I think he's down by the eyes," someone said.

"I'm sorry to hear it," I was about to say, when Raymond appeared, looking unexpectedly fit and weatherbeaten. "Down by the eyes," he explained, was not the Derbyshire equivalent of down in the mouth.

"The eyes are what we call the openings at the bottom of the kilns, where we draw out the burnt lime," he said. "That's sixty feet below where we're standing now."

We were standing by the tops of the four kilns—gaping holes in the ground, fifteen feet across and lined with brick. It's just as well to keep upwind of them. Downwind you get the full benefit of the heat which they breathe out like an enormous kitchen range with the lid off.

The principle of lime-burning has not changed much since the time of the Romans. Shaft kilns, like those at Cowdale, are fed at the top with limestone and fuel—once upon a time charcoal, later coal, and today usually coke. At the same time burnt lime is drawn out of the bottom, so that the stone is always on the move. It takes about four days for the stone to move from top to bottom of the kiln, and by the time it reaches the bottom it has given up its carbon dioxide gas to the atmosphere and become quicklime, losing half its weight in the process.

In another type of kiln the stone alone is fed in at the top. The fuel, slack coal, is shot in at the side of the kiln.

"It all sounds simple, doesn't it?" said Raymond. "But there's plenty to learn on this job. Just watch how we feed this kiln."

At set intervals a narrow-gauge truck is pushed to the brink of one of the kilns and the contents tipped in; first one of coke, then one of stone, and so on. This goes on all day. The trucks are tipped from a different position each time, so that the stone and coke are evenly spread. If they are not, you may get a "crotch-up." That is when coke and limestone fuse together and stick to the lining of the kiln. This may damage the lining and hold up proper burning for days.

Next Raymond took me down to the bottom of the kilns. Each kiln has two "eyes," and a man at each shovels out the lime and loads it into railway wagons. About fifteen wagons, or 150 tons in all, leave Cowdale kilns every weekday. The

wagons have to be carefully sheeted over to keep water from the lime; otherwise it would slake and become useless.

One wagon is reserved for "bullheads." These are incompletely burnt lumps of stone, and the number of them coming out of the kilns tells you how well the burner knows his job.

Forty-six years ago Raymond, at the age of 14, used to pick out bullheads and other rubbish. Sometimes his hands were so raw and bleeding at the end of the day, he told me, that he had to buy lint and cobbler's wax to dress them with. Working conditions have changed a lot since then, and the changeover from coal to coke at these kilns has more than doubled output. The quality of the burnt lime, too, has improved.

Each of the kilns has its own personality, and to give its best each must be nursed along with a gentle hand. The draught must be just right, for one thing. At night, when no lime is being drawn, the eye must be stopped up with clay—the burners call it "slotching"—so that the kiln doesn't burn too quickly. Even on Sunday mornings Raymond or his deputy must be on the spot to see that everything is all right and to supervise the drawing of just enough lime to keep the charge moving and stop the fire from coming out at the top.

Every two or three years the firebrick lining of the kiln has to be renewed. This means letting out the fire and emptying the kiln completely. Afterwards it must be relit from scratch. This is where the burner's close knowledge of the individual kiln comes in useful.

Raymond described how the fire in the kiln is laid. First sticks and old timber are set criss-cross at the bottom. On top of this a truck of coal is tipped in from the top. Then half a truck of stone. Then another truck of coal—or perhaps a half-truck: it depends on the weather and the kiln. And so on. Each load of stone and fuel has to be methodically spread out by hand, the man who does it coming down from the top of the kiln by rope-ladder.

"You're lucky if you get it burning right in less than a fortnight," Raymond said. "We have done it in nine days, but that's a record."

The newer type kilns take even longer to re-line and re-light, and one of the things scientists are trying to discover now is how to keep down temperatures in kilns so that the linings will last longer. Only 900° C. is really needed to burn the stone. But kilns have a habit of developing hot spots of up to 1300° C., which is very bad for the lining and not very good for the lime.

These kilns of Raymond's produce some of the best quicklime in the country. Much of it goes to steel furnaces, but you might find that the walls of the room in which you are now are plastered with Cowdale lime.

M.J.D.

Raymond Bacon (Lime-burner)





# ORCHIDS at the bottom of my garden

By Norman Boodson (Metals Division)

In this age of utilitarianism, what greater pleasure than the cultivation of surpassing beauty for its own sake, writes Mr. Boodson. Let him convince you of the fascination of growing cool-house orchids.

CONTRARY to general belief, growing orchids is not difficult. As compared with other greenhouse plants they are quite tough, and will survive more neglect and greater extremes of temperature. If they are to do well, however, the greenhouse must be arranged so as to simulate their natural conditions: once this has been done they are less trouble than some other greenhouse plants.

There are three groups of orchids—"Stove", "Intermediate," and "Coolhouse," and unless you are prepared to give heat all, or nearly all, the year round, you avoid the first two groups. Coolhouse orchids come mainly from the hills of India, Burma or Mexico and need no artificial heat during most of the year, with a winter minimum of 45-50° F. In my small greenhouse an 800 watt electric water heater, thermostatically controlled, is sufficient. Coming from hilly country, these plants like fresh air, and adequate ventilation must be provided without causing draughts.

Some orchids grow naturally on trees and others are terrestrial, but both need similar treatment. In the greenhouse most of them grow in pots, though a few thrive best on wooden rafts or in baskets. *Vandas*—which are the tree orchids—like a pot full of broken sherds, topped off with a little sphagnum moss and osmunda fibres: they derive all their sustenance from the air and moisture round them, and not from any soil. Terrestrial orchids like a mixture of loam, moss and fibre. It is essential that the potting be done properly, and the amateur is strongly recommended to



AN EASILY GROWN ORCHID, the *Odontoglossum Crispum Hybrid* is a smallish plant from nine to twelve inches high which carries a brightly marked spray. Costs about 30s.

visit a professional nursery, where experts will willingly demonstrate the correct "drill."

The tree under which the orchid grows naturally shelters it from the direct rays of the sun, and similar shading must be arranged for artificial culture. Curtains inside the glass supported by wires from the roof will give the necessary shade and can be drawn back on dull days; they have the added advantage of retaining the heat on winter nights. The air must be kept moist at all times. Under the staging on which my orchid pots stand I have a second, dummy staging covered with coke. The coke is kept wet, so that water vapour rises from it continuously to feed the plants.

Orchids are used to well-marked seasons—a very wet monsoon period followed by dry heat. This should be imitated in the greenhouse, taking the season from the plants themselves. They should be well watered or sprayed while growing, but given little or no water when the year's growth is complete. Most species then need a resting period, which ensures flowering later. Only rainwater at plant temperature may be used, and it is virtually essential to have a rainwater tank inside the greenhouse. Fortunately there was already one in mine, and the only equipment I have had to buy has been the heater. The curtains and staging were made from whatever was available in the boxroom or under the workbench in my garage.

The plants themselves are obtainable from an orchid nursery, of which there are several in this country. It is perhaps best to fetch them yourself, but if that is not possible they can be put on a train for you to collect at your station, or single plants can be sent through the post (but avoid doing this during a cold winter spell). The orchids arrive in their pots, and as the nurserymen are competent packers (they have a large export trade) damage in transit is very rare. Before placing an order, describe your greenhouse to the suppliers, and they will recommend which species are likely to do best. The five species mentioned below will give an idea of the wide variety available.

*Vanda coerulea*. An erect stem with short leaves spreading fanwise, and bearing about ten flowers of very pale blue with a darker throat.

*Cymbidium giganteum*. Very long slender leaves, with spikes of twelve or more yellow, purple and crimson flowers in winter.

*Cypripedium insigne*. A smaller plant than either, sending up two or three flowers of white, purple and brown—the "slipper orchid."



(Above) A NEW VARIETY OF ORCHID, the *Cymbidium Autumn Tints* attracted great attention when it first came out because of its beautiful russet colouring. Costs about £4. (Below) AN UNUSUALLY BEAUTIFUL ORCHID, the *Anceps Chamberlainiana* is the cool-house orchid most closely resembling the more exotic flowers grown in hot-houses.





*Odontoglossum grande*. Carries a few flowers measuring up to five inches across, yellow and golden brown in colour.

*Dendrobium nobile*. A tall thin plant with few leaves, producing spikes of ten or more white flowers with deep purple throats.

All species of orchids were originally imported from their native countries, and many still are. They have been crossed one with another to produce larger or better coloured flowers—the *hybrids*. Raising hybrids is not easy, even for experts: only a proportion of the seeds sown produce plants; not all those plants bear flowers which are an improvement on their progenitors; and those which do may take years to flower.



ANOTHER CYMBIDIUM ORCHID—variety *Eclatant*. The *Cymbidium* is a largish plant about the size of an *aspidistra* with long, tapering leaves. It is exceptionally hardy and will live in temperatures down to 40° F.

Once the hybrid has bloomed it can be propagated by division, in time, *ad infinitum*, and some hybrids popular today throughout the world have been produced in this way from a single plant first flowered many years ago.

By and large, prices seem very reasonable at 15s. to 40s. for the usual species, and from 20s. up for hybrids. These figures are for sturdy plants which will flower annually, given fair treatment. Like every other plant, they increase from year to year and need repotting, at which time they can be divided if required to make new plants which will flower in their turn.

Orchids grow and flower quite differently from other plants, and it is this aspect which most fascinates me. I find it little short of miraculous that a plant can live solely on air and rain-water, and produce such exquisite flowers. Incidentally, the flowers as normally displayed are *upside down*, for the buds always turn through 180° before opening. They have persistent perianths, which means that the petals do not fade as do other flowers, and an orchid cut from the plant when fully open will last up to two months in water, according to its species. Many of them bloom during the winter, when other cut flowers are not available.

If you need to add profit to pleasure, I imagine you could sell the flowers—even in Birmingham single orchids retail at 7s. 6d. to 12s. 6d., so that a spike of twelve *Cymbidium* flowers could more than repay the cost of the plant and its keep.

One final point—and here I quote. "There is one important condition of success. It has frequently been stated that orchids are remarkably susceptible plants, and soon discover whether they are under the care of one who is fond of them, and that they respond by thriving or failing accordingly. We are firmly convinced that this is true, and an amateur who grows a few orchids for the pleasure it gives him is sure to succeed."

And what greater pleasure, in this age of productivity and utilitarianism, than the cultivation of surpassing beauty purely for its own sake?

# MASTERPIECES OF CABINET MAKING

By Rupert de Zoete

Photographs by courtesy of Messrs. Pratt & Sons Ltd., 160 Brompton Road, S.W.3

Chippendale, Sheraton, Adam, Hepplewhite—these are today among the most famous names of the eighteenth century. Each had his own individual style which inspired the highly skilled cabinet makers of the day. Here a connoisseur of antiques explains the characteristics of each designer and how to tell the genuine piece from the inferior article.

ANTIQUE furniture is a subject of great fascination. It has a range and variety spreading its roots right through everyday life. Those with the perceptive eye have the opportunity to study pieces in many places. There are the great museums in our large cities, there are the fine stately homes now open to the public, and there are the countless antique shops for "window shopping." How often, too, we call in at an old-world inn to find it furnished with an unusually attractive table or grandfather clock.

There is no doubt that antique furniture is a lifetime study, but once a grip of the periods has been achieved the hold becomes quite irresistible. Dealers whose life has been spent in the trade will gladly admit that a day seldom passes when something new and unexpected does not turn up.

As mahogany furniture of the eighteenth century was produced by cabinet makers all over the country in large quantities and its size and design lend practical beauty to any home, I will confine myself to this period.

During the reign of Queen Anne (1702–14) walnut was in its heyday. Then in the early part of George I's reign merchants for the first time began to import mahogany from Cuba and the West Indies. This new timber gave fresh life and enthusiasm to the cabinet-making trade. Mahogany was a strong and durable material which lent itself to new designs that could never be attempted in the softer walnut. Chairs with delicately shaped splats and rails began to appear on the market. The carver was able to create new and exciting types of cabriole leg.\* But the transition was a slow process owing to its high cost.

\*The design of the cabriole leg came across from the Continent. It is curved in form with an outward arch at the knee. The foot often terminates in a lion's paw, claw and ball, or scroll foot. The knee is sometimes carved with leaf or shell motifs.



A CHIPPENDALE ARMCHAIR of carved mahogany in the French style—one of a pair



And so gradually developed the golden age of mahogany furniture and with it the household name of Chippendale. Thomas Chippendale, the son of a Yorkshire carpenter, first established his London workshops in Long Acre in about 1749, shortly after moving to St. Martin's Lane.

It is important to realise that this great man was primarily a designer. The famous "Director" which he published was in point of fact just a trade catalogue of designs. It met with an immediate success from cabinet makers all over the country, each one adapting and merging his personality in the finished article. This furniture we know today as "Chippendale."

Unlike French cabinet makers, the English rarely signed their works. There are therefore few which can be definitely established as coming from a particular workshop. Examples, however, do exist at Harewood House and at a few other houses for which Chippendale's receipted accounts are in existence.

### *Chippendale's Many Influences*

Chippendale came under the spell of many influences. His first designs were still reminiscent of the early mahogany furniture—big, severe and architectural in design. Soon the more ornamental style of the Louis XIV period was to filter slowly across from France. His drawings became more and more sophisticated. A particularly good example of his style is the armchair illustrated here. The designer has taken the French fauteuil and given it an English twist. The general outline, the shaped and carved cabriole leg and the decoration of the cresting of the back show the French influence.

However, in spite of some exuberance and excesses, the Chippendale period is noteworthy for the excellence of its design and craftsmanship. English cabinet making was in fact flowering.

In the early 1760's another strong influence was coming to light. This was the work of the Scottish Adam brothers. At this time it was considered fashionable to make the grand tour to Italy. Many ancient ruins such as Pompeii had recently been discovered, and there was a great taste for the classic among men of means. The brothers developed and commercialised this demand.

As in the case of Chippendale, they were not cabinet makers; they were primarily architects who were prepared to design the complete fashionable house—from the building itself, the mural decorations, the furniture, to the carpets to harmonise with painted ceilings.

The Adam piece had a classical line of its own. The cabriole leg was replaced by one tapering to a square foot, carving was replaced by inlay of husks, urns and vases. A good example is the beautifully proportioned cabinet illustrated, with oval panels inlaid with classical motifs.

In the early 1770's Hepplewhite began to make himself felt through his "Cabinet Makers and Upholsterers Guide." Though he was strongly influenced by the Adam brothers he gradually turned away from the classical, and the curved line began to appear again. His chairs became more shapely, with shield- or heart-shaped backs.

There is always a pleasant flowing curve to a Hepplewhite piece, be it a chair, a chest of drawers or a bookcase. He was

fond of the curved or serpentine front, seldom using inlay but occasionally a subtle piece of carving on the splat of the back or down the leg.

Sheraton, an erratic gentleman of the late eighteenth century, is better known these days than Hepplewhite. His drawing book caused a sensation, and as a result all furniture between 1790 and 1800 is often attributed to him. He continued the classical and straight line of the Adam brothers, adding an elegant and fantastic touch of his own.

It should be remembered that the styles of Adam, Hepplewhite and Sheraton were running concurrently and merging one into another. We may sometimes find the transitional piece which puzzles experts and combines all three styles.

There are certain points of quality to be considered when weighing up a piece of furniture. Just as an architect will design a building according to certain rules of proportion and style, so worked the furniture designer.

Mahogany was a costly material and cabinet makers were forced to use it economically, cutting as little as possible to waste. Except in the early eighteenth century veneers on oak or pine were mostly used. Chairs, however, in most cases were constructed in solid mahogany. A good test of quality for the latter is weight. The strong, finely marked and close-grained mahogany weighs heavy.

A great many refinements for a special order would be introduced. For example, in the Sheraton writing cabinet on stand illustrated here the veneer for the oval panel was specially selected for its figure and beauty, and the border was quartered to give a most pleasing geometrical pattern. The drawer front has an inlaid border and decorative panels of inlay worked in above the legs. The interior is fitted with finely made pigeonholes and inlaid drawers, the whole being finished with great delicacy for the lady of the house.

### *The Serpentine Front*

The serpentine or shaped front was another refinement. Not only was it costly on account of the large amount of material cut into, but it also necessitated the use of the finest craftsmen. Cabinets or chests of drawers of serpentine form were always the production of first-class workshops.

The arrangement of the glazing bars in a bookcase door was a source of great delight to the cabinet maker. For important clients he would work out the most elaborate and shapely geometrical patterns. The cheaper article would be fitted with straight glazing bars.

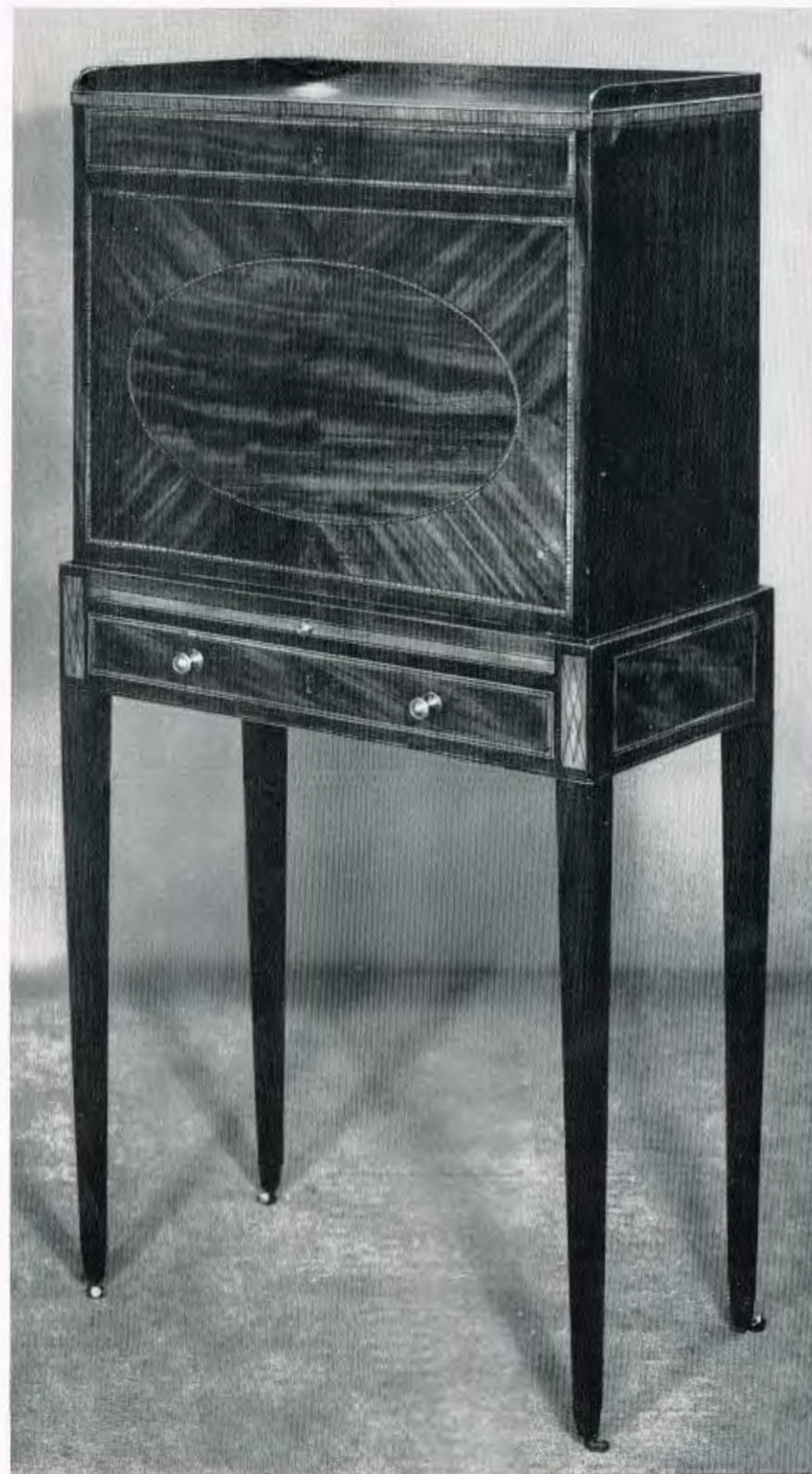
The mounts and handles of furniture are a subject of their own. A cabinet or chest of drawers with its original brassware is always desirable. Alas, this is now a rarity. During the Victorian period the glitter of brass was not fashionable, and many a fine mount was sacrificed for the Victorian turned wood bulbous knob. In the early eighteenth century brass mounts were simple, being sometimes chased and gilded. Later these became more elaborate. Chippendale designed his own mounts to conform to the taste of the piece. For a cabinet in the Chinese style the handles would be designed with a pagoda back plate and other Eastern motifs.

In the Adam, Hepplewhite and Sheraton period handles and mounts tend to take a secondary place.

AN ADAM CHINA CABINET with finely inlaid panels—one of a pair







A SHERATON WRITING CABINET of mahogany—one of a pair

The alteration of mounts on a drawer can be quickly spotted, and traces of the original can usually be detected. The large circular hole of the Victorian knob cannot be easily concealed, even when covered by a new reproduction mount.

Patination plays an important part in the quality of antique

furniture. Patina, or the surface colour obtained by age and wear and tear, cannot be created artificially. The effect is gradually acquired by constant handling, dusting, and the loving care of its owners. For instance, in an armchair the raised work on the splat of the back will be rubbed down to a glistening highlight. The arms will carry the mark of constant wear, where the gentleman of the house has placed his hands when he sat down to table. Once the surface has been stripped of its patination no amount of French polishing will restore its beauty. Only time can recreate it.

As the eighteenth century progressed the cabinet-making trade was prospering up and down the country. It thrived particularly in London, where the well-to-do were placing orders for the finest pieces and the large mansions were being refurnished. Naturally the finest craftsmen were drawn in this direction.

However, the provincial cabinet makers were also doing good business. Their workshops were turning out well-made but simple mahogany furniture in large quantities for the less prosperous. The provincial or country piece can usually be quickly detected, the design lacking ambition and only the simpler, easily constructed styles being attempted. The mahogany used will probably be less costly, of the open-grained variety, and the finish poor.

Faking of furniture is on the wane in these times. Skilled craftsmen who can afford to manufacture a fine antique are dying out. The cost of materials and the cost of time is killing this nefarious trade.

However, the altered pieces must be constantly watched for. This trick of the trade can be carried out in many ways. An example is the large bookcase, now unsaleable on account of its size, being reduced in width and height to a miniature piece suitable for a small room. Usually the alteration will be apparent because of the proportions, the heavy mouldings and altered balance giving an unhappy and incongruous feeling.

It should always be borne in mind that the majority of furniture of quality was made for the gentleman of means who lived in a large and stately mansion. Therefore miniature pieces of fine workmanship are rare and should be carefully checked for their authenticity.

Another trick is the alteration of the heavy turned leg of the nineteenth century. Attempts are often made to lighten this and give it an eighteenth-century look by fluting or beading. This is seldom successful, as the proportion is upset and the finished effect unhappy.

# I.C.I. NEWS

## DUKE OF EDINBURGH PRESENTS "ENDEAVOUR" PRIZES

IN order to stimulate the interest of the younger generation in the work of the British Association for the Advancement of Science, the Company has for the past three years offered, through *Endeavour*, prizes for essays on scientific subjects. An age limit of 25 years is imposed, but there is a special section for competitors under 18.

This year the British Association's meeting was held in Belfast from 3rd to 10th September, and for the second year in succession His Royal Highness the Duke of Edinburgh—last year's president—honoured us by personally awarding the prizes to the successful candidates, at a ceremony in the Great Hall of Queen's University.

The deep and effective interest which His Royal Highness has shown in recent years in scientific and technical matters is very welcome; no less welcome is his interest in the welfare of young people. His awarding of the *Endeavour* prizes was thus a particularly appropriate expression of two of his major interests.

For the 1952 competition candidates were invited to write a 4000-word essay on any one of the following six subjects:

1. Sulphur in medicine, science and technology.
2. Oceanography.
3. The origin of life.

4. The influence of climate on technology.
5. Scientific research in polar regions.
6. Gas discharge tubes.

In judging results special attention was paid to originality of approach and literary style.

This year, for the first time, a woman was among the successful candidates. She was awarded the first prize of fifty guineas, for an essay on *The Origin of Life*. She is Miss Aileen Forrest (24), of 44 Craigie Park, Aberdeen, Assistant Lecturer in Zoology at the University of Aberdeen. Her interests include tennis, hiking, country dancing and bird-watching.

The second prize of twenty-five guineas was awarded to Mr. A. Gilchrist (24), of Magdalen College, Oxford, for an essay on *Gas Discharge Tubes*. His principal interest outside science is in stage lighting for amateur dramatics. In January he sails for America to carry out post-graduate research at Brown University.

The third prize of fifteen guineas was awarded to Mr. R. V. Coates (20), of 59 Selsey Avenue, Elson, Gosport, also for an essay on *Gas Discharge Tubes*. He is a student at Bristol University. His recreations include photography, amateur dramatics, marionettes, music and folk songs.



The Duke of Edinburgh at the British Association meeting in Belfast with the winner of the Endeavour prize, Miss Aileen Forrest, and Professor A. V. Hill

After the prize-giving the Duke chats with Dr. Trevor Williams, deputy editor of *Endeavour*, and another visitor to the meeting



Two prizes, each of five guineas, were awarded to competitors under 18 years of age.

One was awarded to Ivor Johnston (17), of Wallasey Grammar School, for an essay on *The Origin of Life*. He recently won a science scholarship to Emmanuel College, Cambridge, where he is now reading medicine.

The other was awarded to Soli Lam (17), an Indian pupil at Dulwich College, for an essay on *Oceanography*.

In addition to the above prizes the successful candidates were invited to attend the whole of the British Association meeting, with all expenses paid by the Company.

### In Search of the Oldest Pensioner

Who is the oldest pensioned worker of I.C.I.? Since learning at the last Central Works Council that 591 pensioners are over 80 years of age, 113 over 85 years, 18 over 90 years and three over 95 years, many people have been wondering.

The search for the oldest pensioner led up many false trails. Pension Fund records for these pensioners—most of whom were already receiving pensions from the constituent companies of I.C.I. at the time of the merger—are not always accurate. One of the pensioners shown to be over 95 years old admitted to only 90, and produced a birth certificate to prove it! He sportingly retired from the title fight.

Another candidate was Miss Mary Crouch, who was employed at Eley Bros. Edmonton factory until 1920. At 96 years of age Miss Crouch still enjoys good health, apart from failing eyesight and occasional spells of dizziness which prevent her from going out and about as much as she would like. She lives in Islington, and has done so for all but two years of her long life.

She was excited to think that she might be the "grand old lady" of I.C.I. She is, in fact; but the title of Oldest Pensioner belongs to a grand old man, Mr. Henry Haggin, who was born 97 years ago and retired on pension at the age of 72.

Mr. Haggin worked in the Allhusen works at Gateshead, which before it closed down twenty years ago had been one of the General Chemicals Division works. He still lives in Gateshead, and a colleague at Cassel Works recently interviewed him at his home.

*He writes:* Henry Haggin was born in Coalisland, County Tyrone, in 1855. In that year Palmerston was Prime Minister; George Bernard Shaw had yet to be born and Abraham Lincoln to be made President of the United States. In the chemical world the famous Holbrook Gaskell-Henry Deacon partnership was being formed and George Kynoch was gaining recognition by the manufacture of percussion caps.

The young Henry—better known as Harry—spent his early youth helping his father to rear and train horses, which accounts for his lifelong interest in the Turf. And turf had another, more vital, interest for him in those days, for by selling peat he raised the money to buy powder and shot for his muzzle-loader. Harry remembers happy days of shooting "anything that came along, even snipe"; but what his rate of fire was, with ramrod and pullthrough drill to follow, is another question. He was 17 years old when he moved to Scotland, and three years later his wanderings came to an end in Gateshead. He joined the Allhusen Chemical Company there in 1876 and in 1883 married a local girl. They were to remain happily together for the next 61 years. There were nine children of the marriage, four of whom are still living.

His first job in a chemical works was breaking and crushing pyrites, and although Harry does not remember many details, he has the definite recollection that it was very hard work; he worked a seven-day week of eighty-four hours, as was common in most of the chemical industry. He was later put on shift work as a burner man in the sulphuric acid plant. A two-shift system was worked in this factory, involving a ten-hour day shift and a fourteen-hour night shift in addition to a twenty-four hour shift every fourteenth day.

Mr. Haggin's long service was unbroken, although he was employed on a variety of jobs. In 1890 Allhusen's became one of the forty-seven heavy chemical companies which amalgamated to form the United Alkali Company. Harry's work was unaffected by this upheaval and he continued placidly into the new century. During the first world war he was transferred to cooperage, and then, a few months after the formation of Imperial Chemical Industries, he retired on pension.

At that time of life most of us would expect old age and infirmity gradually to restrict our activities. But Harry regards a man of 70 as young! He thinks that a man of that age should,



"Grand old man" of I.C.I.: Mr. Henry Haggin

as he himself did, indulge his hobbies and exact full enjoyment from his well-earned leisure. Walking was one of his pleasures, and it is his chief regret that his health will no longer allow him to tramp the countryside at week-ends. Now he spends his time in reading and in savouring almost a century of memories. Yes, memories; and long hidden scraps of conversation which he himself has half forgotten. What an experience it was to hear him say "I remember my grandfather telling me that he was living at the time of Napoleon—a great warrior he was!"

Harry joined the local Volunteers in the years between the Franco-Prussian War and the outbreak of the Zulu War, and he has pleasant and proud memories of regular Saturday parades with gun carriages on the Moor.

He answered a question on smoking with a good-humoured anecdote about his reaction to his first cigar when still in his teens—he hasn't smoked since! As for drinking, Harry still takes an occasional glass of beer. His recipe for long life is plain common sense; regular habits, regular meals, and above all, moderation in all things.

E.W.E.M.

### Dyestuffs Film Now Ready

The ninth I.C.I. film in the series dealing with the work of Divisions is now ready. Entitled *Commission in Colour*, it tells the story of Dyestuffs Division and the work of the pioneer dyestuff chemists to which I.C.I. owes so much.



Frank Skilbeck and Tom Blackburn of Huddersfield Works act in whiskers and Victorian working clothes to recreate a scene of the dyestuff industry of eighty years ago

In the film an artist has been commissioned by the Division to paint three pictures showing people at work in a factory and in dyehouse and research department laboratories.

His search for the right subjects leads him into conversation with various people, and in a series of flashbacks they tell him the history of Dyestuffs Division, from Perkin's discovery of Mauveine in an attic laboratory to the present-day work on drugs and synthetic fibres.

Scenes for the film were shot by the I.C.I. Film Unit at Blackley, Huddersfield, Trafford Park, Ellesmere Port, Derby, Spondon, Nylon Works, Grangemouth and Linlithgow.

*Commission in Colour* was directed by Gordon Begg. It runs for 30 minutes.



The I.C.I. Film Unit at work in the Lake Shed at Blackley Works

### ALKALI DIVISION

#### New Division Labour Manager

Mr. J. H. Fell has been appointed Division labour manager in succession to Mr. R. L. Rait, whose retirement for health reasons was noted in last month's *Magazine*.

Educated at Marlborough College from 1925 to 1929, John Fell afterwards went up to Clare College, Cambridge. There he took a Natural Science Tripos, Part I, in chemistry, physics and geology and a course in engineering.

Mr. Fell's I.C.I. career began in January 1934, when he joined the Research Department at Winnington. Later he was transferred to the works as a process manager.



Mr. J. H. Fell

As a member of the Territorial Army Mr. Fell was mobilised in August 1939 and served with an anti-aircraft battalion of the Royal Engineers and later as chief instructor in searchlights to the headquarters of A.A. Command. During this period he visited the U.S.A., Canada, Panama, France and Belgium. In 1945 he joined the Allied Commission in Austria as head of the chemical section. In this position he had experience in organising the restarting of industry, not only in Austria but also in Bolzano Province, North Italy.

After returning to industrial life in November 1945 Mr. Fell acted for a while as labour manager for Winnington and Wallerscotte Works. He was appointed labour manager of Winnington Works in April 1946 and for several years has acted as deputy to the Division labour manager.

Mr. Fell is married and has two children. At one time he was a keen participant in motor-cycle racing and rode in the Manx Grand Prix and at Brooklands, but now his main hobby is salmon fishing.

#### Sixty-ton Bridge moved

The Division Construction Works undertook a somewhat unusual job recently when they moved a bridge 90 ft. long and weighing some 60 tons. The bridge had to be moved so that a new lime bed in the Northwich area could be completed. The stream had previously been diverted from under the bridge in



Witton Mill bridge, recently moved by Alkali Division engineers



its old position to flow between the new abutments, the flow being controlled by a weir.

The old course was completely filled with slag, on which was placed a sleeper bed. The bridge was then slewed on rollers and packings and launched on to the steel framing which was erected on a portion of the weir. With the aid of a large bulldozer the bridge was then slewed in the opposite direction to bring it in line with the abutments, on to which it was finally lowered.

Before undertaking this work a model was made of the site to a scale of  $\frac{1}{4}$  in. to 1 ft. This greatly assisted the planning of the job and showed up any difficulties which were likely to arise.

The construction of the lime bed walls and midfeather had previously been carried out by works personnel and plant.

## BILLINGHAM DIVISION

### Visit of Norwegian Scouts

Eight Norwegian Boy Scouts who had spent the previous two weeks as guests of members of the 1st Synthonia Scout Group visited the Billingham factory recently.

All members of the 1st Aarstad Troop, from Bergen, they stayed for the first few days of their visit in the homes of Synthonia scouts and then went with a party of the Billingham boys to London.



*Billingham's Norwegian visitors examine a sectioned engine in the engineering school*

This was followed by a week's camp at Ravenstonedale with members of the Synthonia junior troop (at the end of the sixth day they were wondering how much rain could fall in one week) and by the visit to Billingham.

The Norwegian boys' holiday, which was arranged after a similar visit to Norway last year by members of the Synthonia senior troop, ended with a farewell party and "camp fire" in the Billingham group's new headquarters building.

A feature of the party was the presentation to the Norwegians of a miniature ship's bell as a memento of their stay in England and the handing over by their leader to the Billingham Scouts of a souvenir made from reindeer horn. He also presented special badges to the members of the Synthonia group who visited Norway last year and to his own party.

### A Family Tradition

A son who has followed in more than one of his father's

footsteps is Mr. Harold Whitfield, son of Mr. John Whitfield, Instruments Section clerk in the Energy Section of Gas and Power Works.

Harold, on National Service with the R.A.F. after serving his apprenticeship at Billingham, was solo cornetist in the station band at Melksham while he was on a course there. His father was one of the original members of the 608 (North Riding) Auxiliary Air Force Fighter Squadron band, which he joined in 1937 as a soprano cornetist.

Before he was called up Harold Whitfield was a member of Middlesbrough Salvation Army band. His father began playing the cornet in a Liverpool Salvation Army band when he was 11 years old; and his father, at 80 years of age, is still a reserve bandsman in the Salvation Army at Widnes.

The Whitfields, it is clear, are a great family for tradition, and it is no surprise to learn that as well as Harold Mr. John Whitfield's two elder sons both followed him into I.C.I. John junior is a fitter in Engineering Works, and George is a fitter training as an artificer in Oil Works.

Mr. Whitfield senior is no longer a member of any band and recently gave up his post as secretary of the Stockton Citadel Corps of the Salvation Army. Although he is still deeply interested in music, his job as shop steward for the factory clerks occupies much of his spare time. He celebrated thirty years of married life this year.

### Secretary wins Typing Honour

Twenty-four-year-old Miss Anne Roper, secretary to Dr. A. G. Winn, works manager of Products Works, has won a Royal Society of Arts Silver Medal in advanced typing—the highest honour it is possible to gain in the subject.

Only three of the hundreds of entrants from all parts of Britain who sat this year's examination gained silver medals.

Miss Roper, who came to Billingham three years ago, is a native of Hexham, Northumberland. She is a former pupil of a London commercial college and Stockton Technical Institute evening classes.



*Miss Anne Roper*

### Leek Champion uses Concrete

His gardening friends thought Mr. Pat O'Brien, a safety supervisor in the anhydrite mine, was pulling their legs when he told them he was building a concrete leek trench. But he was not. Mr. O'Brien really has a trench which is bounded by six-inch thick concrete walls, which go down three feet to solid clay. It is 44 ft. long and 4 ft. 6 in. wide.

He says the secret of leek-growing is to make the roots seek the water. Therefore he sinks 15 in. long vertical drains at intervals along the centre of the trench, into which the water is poured. Horizontal drains take away the surplus. The main idea of building the trench, says Mr. O'Brien, is to keep away the slugs and grubs which used to spoil his leeks. They cannot penetrate the concrete, nor can they come up through the clay at the bottom of the trench.

Mr. O'Brien considers that to have won three out of four shows entered with leeks from his new trench is sufficient reward for having spent several months removing the necessary five or six tons of soil.

He also specialises in onions, carrots, potatoes and beetroot, and has an array of clocks and miniature cups as testimony to his success.

## DYESTUFFS DIVISION

### Death of Bravery Award Winner

One of the first recipients of the I.C.I. Bravery Award, Mr. Harry Smithies, died on 15th August.

Mr. Smithies, who is well remembered as a most loyal and cheerful servant of the Company, retired from Blackley Works nearly seven years ago. He had worked there on the rubber chemicals plants since the early days when these products were first manufactured.

He was awarded the I.C.I. Bronze Medal for bravery in tackling a fire in July 1929 involving a highly inflammable liquid. By his action he prevented, at great personal risk, a major outbreak which might have had very serious consequences. He received his medal from the President of I.C.I. (then Sir Harry McGowan) at the Central Council meeting on 20th November, 1930, at Imperial Chemical House, when the first six I.C.I. Bravery Awards for acts of outstanding courage performed while at work were presented.

Throughout his 23 years' service Mr. Smithies had a fine record of attendance and lost a total of only four weeks' work, including the period off work occasioned by the injuries he received at the fire.

During retirement he attended many works functions, and there is no doubt that he had obtained a full measure of enjoyment from his well-earned leisure.

### British Model Gliders in Austria

Captain of the British team of four model glider enthusiasts which visited Austria in August to compete in the international glider contest was Mr. William Farrence, from the Huddersfield works of Dyestuffs Division.

Forty-one competitors from ten nations took part. There were none from behind the Iron Curtain, but a Yugoslav won first prize. Mr. Farrence himself was 18th; he thinks he might have achieved a place in the first five had he not damaged his model during the second launching and been forced to make his second and third launchings with his spare model.

Mr. Farrence made all the models which he flew in the contest. He and his brother Ernest, well known as "the flying Farrences" in model gliding circles, have already flown them in various parts of the country.

The British team found conditions rather different from those they are used to. In Europe (as distinct from Great Britain) competition flying is done in the early morning to avoid the excessive air lifts created by higher temperatures later in the day. Compared with models flown in the rest of Europe, those used in Great Britain generally sacrifice some lifting power by having the wings set at a more acute angle to the body, which gives increased stability in turbulent air.

The models are launched in much the same manner as a kite is flown, using a nylon tow-line. But first the flyer must



*Mr. Farrence with one of his power-driven models*

locate a suitable upward thermal current in which to launch his glider. Local knowledge is a great help in locating these currents, apart from indications given by the windsock and clouds. A simple time fuse which controls the elevators and causes the glider to stall prevents models flying out of sight and chance of recovery.

Mr. Farrence is also interested, but to a lesser degree, in power-driven model aircraft. His interest in model aeroplanes and gliders began when he was a schoolboy. Now, at the age of 28, he is chairman of the West Yorkshire Model Aeronautical Society.

## LEATHERCLOTH DIVISION

### Laboratory Assistant gets Weaving

The fabric chosen as the most outstanding at a recent exhibition of work by part-time students of the Manchester College of Technology was that woven and designed by Miss Joyce Johnson, of the Division Laboratory. It was a damask furnishing fabric in a modern adaptation of an Elizabethan design, with a weave construction giving a three-dimensional effect.



*The fabric designed and woven by Miss Joyce Johnson*



Miss Johnson, who is 22, came to Leathercloth Division two years ago from the Shirley Institute of the British Cotton Industry. Her spare-time work on textiles is quite different from her normal duties as a laboratory assistant. At the Manchester School of Technology she has been studying weaving and textile design. She now holds National Certificates for Textile Manufacture at both the ordinary and higher levels.

## METALS DIVISION

### New Joint Managing Director

Mr. M. J. S. Clapham, Midland Regional manager since October 1951, returned to Witton on 1st October to take up his duties as joint managing director of the Metals Division.



Mr. M. J. S. Clapham

Mr. Clapham, who joined I.C.I. in 1938, is of course no stranger to Witton; he was personnel director there from 1946 to 1951 and has since continued to serve on the Division board as a visiting director.

We offer him our congratulations on his appointment and our best wishes in his new post.

Mr. C. E. Prosser relinquished his post as joint managing director on 30th September and becomes deputy chairman of the Metals Division.

### Prize Carnation Grower

In the last four years Mr. Charlie Ford (Lightning Fasteners Ltd., Witton) has won more than 100 awards for his carnations, eighteen of them this summer alone.

On 8th July at the British National Carnation Society's show he won first and second prizes for named varieties and third prize for a new pure white variety raised by himself. This seedling came from a cross of Exquisite (pink) and King Cup (yellow), and is his finest achievement in seven years' cross-breeding. He intends to name it after his wife, Kathleen.

At the Quarry Bank and District Carnation Society on 12th July Mr. Ford won four firsts and the prize for the best bloom in the show, and at the Coventry Carnation, Rose and Sweet-pea Society show he did even better, with four firsts, four seconds, a silver medal and a special award.

### Witton Engineer in U.S.A.

Mr. J. R. Willetts (Power Station, Witton) has gained one of the James Clayton travelling scholarships awarded by the Institution of Mechanical Engineers and is now spending a three months' "busman's holiday" in the U.S.A. During his travels he will be studying the theory and practice of the superimposition of high-pressure plant on existing power plants—in other words, the "pepping up" of power plants—and will visit power stations and other places of interest to power engineers (he includes Niagara Falls in this category!).

Mr. Willetts holds honours degrees in civil and mechanical engineering, and before joining I.C.I. gained practical experience of power plant work at B.S.A., Rover and Peter Brotherhood. During the war he served in the engineering branch of the Royal Navy.

## NOBEL DIVISION

### Mr. O. W. Stickland

His many friends in Britain and abroad learned with deep regret of Mr. O. W. Stickland's death at his West Kilbride home early in the summer. During 41 years' service with the Company, which began at Stowmarket in 1904, Mr. Stickland made a large technical contribution to its progress. He specialised in the study of propellants and was a recognised authority on his subject.

Mr. Stickland came to Scotland and the Technical Department of Nobel Industries Ltd. after 16 years' service with the New Explosives Company, Stowmarket. Some five years later he was transferred to the Research Department, Ardeer, where, during the following ten years his work added much to knowledge of propellants and led to many technical advances.

From July 1935 until he retired at the end of December 1945 he applied his vast experience to many tasks on behalf of the Company and the nation. He was, for example, a member of the Ministry of Supply Mission to India in 1940, and on the outward and return journeys he visited South Africa. After a short return to Ardeer he went to America for the Ministry of Supply and remained there until April 1944. On returning to Britain he continued to serve the Ministry. His abilities were applied in yet another direction, and in 1945 for a period of some months he was appointed a colonel on the Scientific Intelligence Staff, Field Forces. He returned to I.C.I. in July 1945 and at the end of December in that year he retired.

### Stevenston becomes a Burgh

Three employees of Ardeer Factory have been elected to the town council of Stevenston. They are Mr. T. H. Hyslop, Mr. J. Clements and Mr. T. Maxwell.

This is creditable enough in itself. But there is another reason for general rejoicing among the people at Ardeer. For several years a committee has been agitating for Stevenston to be given the status of a burgh. Many members of this active committee work in Ardeer, and it must have been pleasant for them to see the first municipal elections held in the town.

These elections, while they brought their own confusions, were satisfactory for everybody because they were visible evidence that Stevenston could now look after its own affairs.

Electing a town council from scratch was an exciting business. There were more candidates than are usual for municipal elections—for the nine seats there were twenty-three candidates—and nine of them were Ardeer or Nobel Division men. The three who were elected may have differences in politics, but they agree on one point: all are glad that Stevenston is at last a burgh.

### Award for Great Courage

Mr. William Young, a joiner in Westquarter Factory, has received from the hands of Sir Ian Bolton, County Scout Commissioner and Lord Lieutenant of the County, the Cornwell Scout Badge posthumously awarded to his son Billy.

Billy Young's death caused much sorrow to people in Westquarter. He was 14 years old, and for nine months before he died he was a patient in the Falkirk and District Royal Infirmary. The courage, fortitude and fine example he showed in the face of great suffering during his illness were commended by everyone who knew him. The staff of the infirmary described Billy as a model patient whose example encouraged all the other children in the unit.

The Cornwell Scout Badge was instituted in 1916 in memory of Jack Cornwell, a boy member of a naval gun's crew who died of wounds received at Jutland. It is awarded for great courage, endurance or gallantry.

## PAINTS DIVISION

### Spotter wins Flight as Prize

A flight in a Superfortress over the Eastern Counties and his home town of Ipswich was Mr. L. E. Harridge's reward for winning third place in a height, speed and course judging competition organised by the Royal Observer Corps.

Mr. Harridge, who works in Stowmarket Drawing Office, has been a member of the Royal Observer Corps only since last Christmas, and he attributes his success more to intelligent guesswork than to skill. Nevertheless he admits that his knowledge of engineering may give him an advantage. In this competition he was pitting his skill against some four hundred other observers of No. 18 Group.

Spotting of this order seems to be common among Stowmarket's I.C.I. personnel. Two years ago Mr. R. A. Salmon won a height-judging competition, for which the prize was a flight in a Meteor.

## PLASTICS DIVISION

### A Fishy Business



'Alkathene' may never prove to be a very serious rival to the traditional glass goldfish bowl; but, as our picture shows, it has possibilities!

This unusual package was exhibited by a firm of plastics fabricators in Wellington, New Zealand.

## SALT DIVISION

### That's a Pigeon, that was

At a speed of 749 yards a minute Mr. Jim Summerfield's blue chequer racing pigeon NU47F9031 flashed into Runcorn in July to win second place in Section F of the National Flying Club race from southern France.

She had covered the 696 miles and 510 yards from Pau in just over 27 hours flying time. Section F of the competition comprised birds from the counties of Lancashire, Cheshire, Flint, Denbigh, Caernarvon, Cumberland and Westmorland. Among the Cheshire entrants Mr. Summerfield's bird was the first to arrive, and thus won her owner the S. P. Griffiths (Northwich) Memorial Trophy. Out of the 1711 birds which competed from the United Kingdom she was 31st.

Mr. Summerfield, a building foreman at Weston Point Works, has been training and racing birds for many years, but this success in the big event of the pigeon-fancier's calendar is his best effort yet. His home-made loft holds twelve pairs of birds, but this season he chose his four best birds for special training and missed all his local club races.

The four birds he chose had all recorded good performances in cross-Channel flights. His method of training them for the big race was to send them on flights of up to 200 miles. When the training period was nearing its end he selected two to go to Pau.

### A Fleet broken up for Firewood

For more than a year 500 tons of oak and elm have been lying at Meadow Bank Works, Winsford—and nobody wanted them!

The timber was in the form of redundant salt boats, which had been proving quite a problem, for they were blocking the cuttings and inlets on the Company's two-mile stretch of the river Weaver. In August the last of the unwanted vessels arrived at a shipbreaker's yard at New Ferry, near Bromborough, Cheshire, where it was hauled out of the water for breaking up. Some of the timber is usable and will be salvaged; the rest will be cut up for firewood.

The old method of disposing of unwanted boats was to scuttle them in Winsford Flashes—large stretches of water also known as the Cheshire Broads—and many are still aground near the banks. But it was decided that this would in time spoil the beauty of the Flashes, and another way of disposing of the old craft had to be found.

Most of Salt Division's wooden salt boats have histories and were built in local shipyards which no longer exist. The *Lady Delamere*, a 160-ton steamer, was built by a Mr. Gibson of Northwich in 1883, and until 1946 was called the *Arabia*. At that time, however, the Cunard Steamship Company was building a liner which they also wanted to call "Arabia." They asked I.C.I. if they would change the name of the salt boat.

The Company went to much trouble to change her name, and she was eventually called the *Lady Delamere* after another Salt Division craft which had been scuttled in the Flashes in 1944.



Mr. J. Summerfield



NU47F9031



The *Escort*, the smallest of the fleet, was in the news in December 1950, when she was involved in a collision in the Manchester Ship Canal. She sank, but was temporarily re-floated to be towed to the "ships' graveyard" at Winsford. She was a barge of 83 tons 16 cwt. and was built by Mr. George Deakin of Winsford in 1870.

The 95-ton steamer *Antigua* was originally built as a barge in 1879 by Mr. Gibson of Northwich and was equipped with engines in 1882. The *Africa*, on the other hand, started as a steamer. She was built in 1876 by Mr. T. Hulse of Winsford and was converted into a barge in 1908.

Originally the Salt Division fleet numbered more than a hundred craft, but this has now been reduced to twenty. Their documents, which are filed in the craft manager's office at Winsford Works, date back as far as 1856—the year of registration of the oldest vessel, the *Firefly*.

### An Old Salt's Hobby

Mr. Herbert Pritchard, who regularly collects his pension at the Meadow Office, is an "old salt" in more senses than one. Before he became a saltman at Winsford Works, where he worked in the Dockyard's sail room for twelve years until his retirement in 1943, he had sailed the seven seas. All his service afloat, lasting thirty years, was in sailing ships, and during that time he developed a love for the sea and ships which has grown rather than diminished with the passing years.

Like many old seamen, one of the ways in which Mr. Pritchard keeps his old love fresh is by carving models of ships, with a preference, natural in him, for sailing vessels.

A model of which he is specially proud is that shown below. She is the five-masted barque *Köbenhavn*, measuring (in Mr. Pritchard's nautical terms) "19½ inches from the end of the bowsprit to the end of the spanker boom." This splendid overall model he brought into being some twenty years ago, mainly with a small penknife and a block of pitch-pine.

Mr. Pritchard was only once privileged to see the original *Köbenhavn*, reputed to be the largest sailing vessel afloat. It was in 1927, when she visited Birkenhead. He examined her closely and she made a deep impression on his mind, so deep that a few years later he was able to fashion his model by relying entirely on his recollections of the original.

The life of the original *Köbenhavn* was regrettably short—less than ten years. Her last voyage began on 14th December, 1928, when she set sail from Buenos Aires bound for Australia



Mr. Pritchard's model of the *Köbenhavn*

in ballast with a full complement, including sixty cadets. This gallant ship was never seen again, and there were no survivors to tell of the disaster which overtook her.

### WILTON WORKS

#### Young Footballer tries for First Division

Working in a metallurgical laboratory and professional footballing would seem to have little in common; but Mr. Roy Walker of Engineering Department successfully combines the two.

In 1950, while still a school-boy, he played team football for the first time as outside left for Redcar Boys' Club. Within a short time he was seen by a Chelsea scout and he was invited to accompany the Chelsea Juniors on their Dutch tour, where he played in every game. He remained at school until the summer of 1951, when he became a member of the Stamford Bridge ground staff and once more played for the junior XI.



Mr. Roy Walker

The thought of another career decided Roy Walker to return home in December; that was when he came to Wilton. In no time he was signed for Wilton and he played no small part in the success of a team which was runner-up in its league.

During last summer Roy Walker was invited to join the Scarborough Club, but Middlesbrough F.C. had heard of his prowess as an outside left and offered him a trial. His performance greatly impressed the critics. His meteoric rise to league football continued with his selection for Middlesbrough reserve team in their first game of the season, and at the time of writing he is still holding his place among many experienced footballers.

Now Roy has two ambitions: to become a qualified metallurgist, and to get his place in the Middlesbrough team to meet his old club, Chelsea.

\* \* \*

### OUR NEXT ISSUE

This spring Mr. R. Oliver of Plastics Division spent a month in Japan, most of it out of Tokio, living as the only European among Japanese and visiting their factories. He has drawn on his experiences to write a most interesting article on life in Japan today.

Our next article is the story of a ski-ing holiday with a difference—one within the reach of the man of moderate means. How many people know that the Central Council of Physical Recreation run courses for people who have never been on skis before and then send them to Norway for a fortnight's ski-ing at a total cost of under £25?

Our colour feature brings to life a process that almost everyone in I.C.I. will have heard of: the making of Soda Ash. Once again Arthur Horowicz is the illustrator, and his water-colour sketches convey a vivid impression of the soda-ash works of Alkali Division. Finally, Mr. Ronald Farquharson contributes a witty reminiscence under the title "But Answer Came there None."



## MY FIRST MOTOR CAR

By F. M. S. Harmar-Brown (Central Publicity Dept.)

Illustrated by M. Aitchison

AN article in one of the motoring papers has suggested that no one earning less than £1250 a year can afford to run a motor car today. Be that as it may, the expenses of motoring undoubtedly place it in the same category as caviare, and it is for the consolation of those who have had to give up the car that I offer these brief notes on my motoring experiences in the good old days.

Back we go, then, to the year 1939. Older men than I may wish to go further back than that, but the days of 1939 are good enough and old enough for me. By March of that year I had been earning—or at any rate receiving—some £4 a week for several months, and I had been able to save, without the slightest difficulty, the impressive sum of £11 13s. 4d. I was, I felt, a man of substance, and I might well consider the purchase of a motor car.

This was not a matter to be rushed into lightly. A careful examination of the market had to be made. I was a little tempted by a 28 h.p. 1919 Rolls-Royce hearse priced at £7 10s. in a scrap yard at St. Neots, but finally rejected it as too expensive to run. A 1924 Austin 7, poised on the top of a hill

in a field near the Oxford by-pass and bearing on its yellowed screen the whitewashed legend "21s., ready to drive away" was dismissed as too small. Finally, I heard (through one of my numerous contacts) of a car that seemed just the job. The vehicle, said my contact—a chimney-sweep, as it chances—was lying at Long Campden (contacts always use this technical language) outside the establishment of a junk merchant named Bagg. It was said to be a 1929 Morris Minor saloon, priced at £12. This sum was, of course, well outside my maximum of £10, but I resolved to attempt to do business, and forthwith leaped astride my bicycle and set off on a warm April afternoon for Long Campden, which, as you all know, is a picturesque village nestling in the heart of the Cotswolds.

Bagg's establishment used to be half-way along the left-hand side of Campden's main street, going down the hill. "Used to be," I say, because today he is gone, and I understand that his premises are occupied by two affectionate young men devoted to the sale of chintz and lampshades cunningly fashioned from old wills.

In those days, however, Bagg was doing well, and any sunny





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afternoon his stock of old baths, sewing machines, umbrella stands, canteen urns, Victorian picture postcards and associated merchandise could be seen tumbling out of his shop and spilling on to the grass plot that bordered the main road. The culminating feature of this display was the Morris Minor—light blue—with a placard leaning negligently against the off-side front wheel bearing the terse legend “SNIP, £12.”

Mr. Bagg himself was a thin, stringy-looking little man with a neck like a plucked chicken. He wore three knitted waistcoats and a bowler hat, and smoked, surprisingly, a cigar.

“How much,” I asked, the time of day having been suitably passed, “how much do you want for that car?” “Oh, ‘er!” he said. “Er! I couldn’t take less than £15 for *er*.” “But it says only £12 on the card,” I said indignantly. This he seemed to regard as a very unfair comment—it set him off into a severe admonitory mumbling, the upshot of which was that I could have *er* for £12 and not a penny less. The tempo of commerce moved more slowly in those days, and I knew that no further advantage could be gained that afternoon.

The following Saturday I cycled over again and bought two Victorian picture postcards.

Three weeks later saw me in Campden once more, and I noticed with the keenest pleasure that there was now a card propped on the bonnet that read “Only £10, Very Fast.” Obviously a high-pressure selling campaign was being conducted, and I felt that the time had come for action.

“I see you’ve not sold that car yet,” I said, after the usual formalities. “Ah, she’s a splendid motor, that one is,” replied Bagg evasively. “Start up straight off, she will.” This I regarded as a direct hint that matters were to be carried a stage further. “Please start her up and let me try her.”

Bagg removed his bowler hat, took off the outermost of his

knitted waistcoats, and carefully set aside half an inch of cigar in a handy saucer inscribed “L.M.S. Hotels.” Then he brought a handle from the back of the shop, switched on the ignition, turned on the petrol, and wound vigorously, there being very little compression to interfere with this activity. After about fourteen revolutions the engine moved imperceptibly into life with a gentle ticking of tappets, and a plume of blue smoke began to issue from somewhere behind the near-side running board. Skilfully concealing his astonishment, Bagg straightened up. “Start up straight off, every time, she do,” he said with sombre satisfaction.

Trembling with pride and anticipation, I entered the driving seat, backed into a cloud of blue smoke, and drove gently backwards and forwards while the residents of Campden who happened to live near began to shut their front windows. Finally I returned and switched off the engine, which coasted gradually to a stop. “She’ll do,” I said, like a test pilot on the films, and we retired to the table at the back of the shop to talk business, Bagg carefully collecting his cigar on the way.

In the end we fixed the price at £8 for the car plus three gallons of petrol, cash changed hands, a new cigar was lighted, and I came into the daylight to take possession of my love.

She was nowhere to be seen.

Then a faint creaking of spokes in the distance turned my gaze downhill—and there she was, making with silent purpose for the main entrance of a large, well-known and exclusive hotel.

With no vulgar display of force she fetched up gently against the impressive double doors, rattling them just loudly



“Please take it away at once”



I had overlooked one vital factor . . .

enough to summon a very refined and extremely astonished receptionist, for all the world like some old lady down on her luck trying to touch for a drop of gin out of hours.

“Is that yours?” said the receptionist—a lovely girl—with considerable hauteur. “If so, please take it away at once.”

“She is mine,” I said with what dignity I could muster. “Let me in through a side door and I will take her.”

The hotel patrons seated in the lounge regarded me with well-bred dislike as I was led in from the kitchens, took up my stance just inside the front door, through which her bonnet was nosing, and wound her into life once more.

Moments later no trace of us remained save a cloud of blue smoke in the lounge and a small pool of oil, no bigger than a man’s hand, on the immaculate Cotswold stone doorstep. We were away. Unhonoured, unsung, unsafe, unlicensed and uninsured, we set our course for Campden Hill. The creaking of spokes, the high-pitched song of the crown wheel and pinion, the deep bass thump of the rear main bearing, the syncopated twittering of the bodywork and the low moan from the gearbox were for my glad ears a symphony of mechanisation. I was a motorist.

As we neared the top end of Campden the first warm drops of rain fell from a darkened sky, and by the time we rounded the corner that leads to Campden Hill proper a gusty wind was lashing the rain against our sides. A quarter of the way

up the ascent an ominous creaking suggested that I had overlooked one vital factor—*there was dry-rot in my car.*

Suddenly the blow fell. A quick squall got under the eaves and, with a cracking of rotten timber, lifted the roof clean off. The back and sides, no longer held in place, swayed crazily for a few seconds and then fell with a crash of broken glass into the road. The wooden posts supporting the windscreen were torn sideways like matchsticks and the screen fell into my lap. And the rain came down.

So we stopped, she and I, and I gathered up the pieces and threw them over the hedge into a field of green corn. Then, very wet and feeling remarkably exposed, we drove on under the slate-grey sky.

Later I gave her a linoleum body and together we went all over the Cotswolds. But our friendship was short-lived. The war came, petrol was rationed and motoring became a serious occupation permitted only to a privileged few. In the end I sold her to a farmer, and to this day her indomitable engine provides power for sawing wood.

There have been other cars, but nothing can equal the thrill of first possession. Today, when I see advertisements with their talk of dynafloes, hydromatics, power steering, fireball engines and all the rest of it, I reflect that motoring is not what it was. There is, I feel, a moral in all this, but its precise significance for the moment escapes me.





"Gathering Storm"

Photo by D. B. Rothwell (I.C.I. Malaya)